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July 12th, 1996

Mr. William Caton  
Acting Secretary  
Federal Communications Commission  
1919 M Street, N.W.  
Washington, D.C. 20554

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Re : ET Docket No. 96-102

Dear Mr. Caton:

Transmitted herewith are an original and nine (9) copies of the Comments of Western Multiplex Corporation in response to the above Notice of Proposed Rulemaking by the Commission released on May 6th 1996.

Please address any questions concerning this matter directly to the undersigned.

Very truly yours,

Graham Barnes  
Director of Marketing

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Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554

FCC 96-193

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In the Matter of )

Amendment of the Commission's Rules to )  
Provide for Unlicensed NII/SUPERNet )  
Operations in the 5 GHz Frequency Range )

ET Docket No. 96-102  
RM-8648  
RM-8653

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Adopted: April 25, 1996

Released: May 6, 1996

**COMMENTS OF WESTERN MULTIPLEX**

Western Multiplex Corporation (WMC), pursuant to Section 1.415 of the Commission's rules, hereby submits these comments on the above referenced Notice of Proposed Rule Making. WMC is a major supplier of Part 15 radios operating in the 2450 MHz and 5800 MHz ISM bands with spread spectrum technology. WMC has many years of experience and considerable practical knowledge of the market's needs for these products. WMC has successfully designed, manufactured and marketed Part 15 spread spectrum radios and developed extensive technical experience in the operation of communications systems in the unlicensed ISM environment which require co-existence with a wide variety of unlicensed equipment manufactured by others as well as other emissions generated by non-communications equipment using the ISM bands. WMC is submitting these comments in order to highlight the specific areas that are of concern to users of our equipment.

## **A. UNLICENSED BANDS PROMOTE INDUSTRY GROWTH AND SERVE THE PUBLIC INTEREST**

WMC is in general support of the creation of additional bands for unlicensed radio operation. It has been demonstrated that the availability of existing ISM bands for Part 15.247 unlicensed use has resulted in several developments of innovative communication systems. These systems provide a very efficient use of the spectrum and they serve the public interest. In addition to this general support, WMC also supports the creation of a distinct frequency band for unlicensed NII applications and supports the Commission in making earlier restricted bands available for such important purposes. This particular application has demonstrated a growing importance with the evidence of rapid growth of wired and wireless NII access and related industries over the last few years.

## **B. UNLICENSED EQUIPMENT OPERATING UNDER PART 15.247 RULES IS ALREADY BEING USED FOR NII LONG DISTANCE WIRELESS ACCESS.**

WMC agrees with Apple Computer that part of the application for NII/SUPERNet devices requires operation at distances in excess of 10 km. These types of unlicensed links are already in existence using Part 15.247 ISM band spread spectrum radios, including those available in the 5800 MHz ISM band. Several companies already offer protocol-transparent ISM devices which are capable of providing high data rate simplex and full duplex links over long distances. Since these devices already exist, alterations of the allocation of spectrum in the 5725 to 5850 MHz band specifically for this part of the NII/SUPERNet application is unnecessary.

## **C. SINCE LONG DISTANCE LINKS CAN BE ACCOMPLISHED WITH READILY AVAILABLE TECHNOLOGY, SPECTRUM REQUIREMENTS CAN BE REDUCED.**

WMC proposes that since long distance links can be accomplished using Part 15.247 spread spectrum technology, only a portion of the requested spectrum is actually required for the remaining applications. WMC agrees with Andrew Corporation's point of view regarding spectrum requirements as stated in the NPRM paragraph 25 "Andrew contends that 150 megahertz of spectrum at 5.15 - 5.30 GHz should be sufficient initially for NII/SUPERNet services, adding that the benefits of making available 300 megahertz of spectrum are too speculative at this time to warrant disruption of existing services at 5.8 GHz." In fact, since the Commission's proposal is to grant 5.15 to 5.35 GHz, this would allow 200 MHz of bandwidth. WMC is in support of the granting of this portion of the spectrum (only) for NII/SUPERNet devices. However, we recommend that long distance applications should be enabled in the 5.15 to 5.35 GHz band with appropriate technical standards.

#### **D. SPECTRUM SHARING IN THE 5800 MHz BAND IS A CONCERN**

Part 18 of the FCC Rules does not put limitations on the amount of radiation allowed from ISM non-communications equipment into the 5800 MHz ISM band. As a result, Part 15.247 communication systems in this band are required to overcome substantial background radiation. It has been proposed in NPRM Docket 96-8 that EIRP limits be removed for this band, thus potentially resulting in the continued capability for continued long distance unlicensed links by spread spectrum systems in this band. The Commission should consider one of two proposals to avoid potential for interference to or from NII/SUPERNet devices in this band:

- (1) Do not grant NII/SUPERNet devices use of any portion of the 5800 ISM band. It is demonstrated in Paragraphs A and B above, that NII/SUPERNet devices may not require as much spectrum as requested due to their ability to use ISM Part 15.247 devices for long distance links.

- (2) If NII/SUPERNet devices are authorized in this band, they must not cause objectionable interference into existing and future spread spectrum devices operating in this band, nor shall they impose additional restrictions on spread spectrum devices operating in this band now or in the future.

#### **E. UNNECESSARY REGULATION IS DISCOURAGED**

WMC proposes that the "listen before talk" protocol should not be included in rules for unlicensed radios at this time. It has not been demonstrated that this will be required for successful operation of NII/SUPERNet systems. Imposing these protocols will restrict applications, shackle the developing industries and potentially negate the full potential benefit of this additional unlicensed spectrum. In addition, other similar proposed regulations such as channel allocations are seen as unnecessary for the same reasons. WMC is very concerned about the Commission's statement made in Paragraph 56 of the NPRM regarding potential licensing of the 5800 MHz band if higher power operations are allowed in this band. WMC is also not aware of any reasons why outdoor antenna mounting should be limited to 15 meters above the ground by Commission regulation. It should be noted that at the proposed frequencies of operation, unobstructed line-of-sight is generally required for fixed operators. WMC believes that existing local legislation and site-by-site approval of antenna heights by local governments is sufficient to monitor this aspect of these systems.

#### **F. CONCERN ABOUT POSSIBLE RETROACTIVE RULES RESTRICTIONS ON PART 15.247 IF SHARED OPERATION IS ALLOWED**

WMC is very concerned that if the NII/SUPERNet devices are granted access to the existing 5800 MHz ISM band, that retroactive rulemaking to Part 15.247 must not occur as this could render existing

unlicensed systems unusable. WMC points out that unlicensed systems in this band are in significant use today, with continued growth expected in the coming years.

#### **G. EIRP OF -10 dBW WILL SEVERELY LIMIT RANGE**

WMC has reviewed background radiation caused primarily by Part 18 ISM devices in the 2450 and 5800 MHz ISM bands. With WMC's practical experience of the deployment of thousands of point-to-point links in these ISM bands, we can unequivocally state that a -10 dBW EIRP, as suggested by WINForum, will limit operations in both of the proposed NII frequency bands (5.15 to 5.35 and 5.725 to 5.875 GHz) proposed by the Commission so that these systems will only be practical for indoor links and very short distance outdoor links (up to possibly a few hundred meters), even with directional antennas. While long distance links of 10 km or more can be accomplished using Part 15.247 unlicensed radios, WMC believes that it would be in the interest promoting the widest possible application of the NII/SUPERNet wireless devices to eliminate this EIRP restriction. WMC calls attention to our comments on ET Docket 96-8 regarding the desirability to use directional antennas and the general demonstration that these antennas limit interference and permit increased frequency re-use for unlicensed bands. This argument also applies to NII/SUPERNet applications

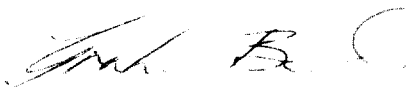
#### **H. CONCERN ABOUT ALLOCATION OF BANDS THAT ARE NOT FREE FOR ALLOCATION**

Currently all users of the ISM bands operate on a secondary basis, therefore there is no allocation for these bands. However, the Commission suggests that these bands, which are already in use, can be allocated for NII access. WMC raises the issue that a frequency band which is already in use (such as the 5800 MHz ISM band), whose devices operate on a secondary basis cannot be allocated

## CONCLUSION

WMC believes that the NII/SUPERNet applications will serve the public interest and is an enthusiastic supporter of the allocation of additional unlicensed spectrum. WMC is very concerned about potential sharing, reallocation and rule changes that could affect the users of the spectrum in the 5800 MHz ISM band and strongly discourages the Commission against allocating this band to NII/SUPERNet applications; it is already in significant use and devices operating under existing rules can serve the NII/SUPERNet functions without further regulation. WMC also strongly discourages needless regulation for any bands allocated to NII/SUPERNet applications.

Respectfully submitted,



Graham Barnes  
Director of Marketing  
Western Multiplex Corporation.